



# *X-Plain™*

## *Floaters And Flashes*

### Reference Summary

Sometimes people see small, moving spots or specks in their field of vision. These sensations are called floaters.

About 7 out of 10 people experience floaters at some point during their lives. Sometimes flashes of light, or flashes, are experienced with floaters.

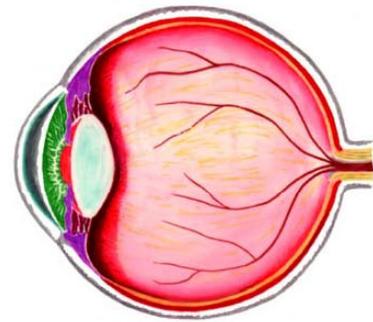


Floaters and flashes are very common and are not usually a sign of a dangerous medical condition. However, if both floaters and flashes begin suddenly, it may indicate a more serious eye problem, such as a retinal tear or retinal detachment.

This reference summary explains what floaters and flashes are, their symptoms, causes, and when they may indicate a more serious medical condition. The tutorial also covers diagnosis, treatment, and self-care for floaters and flashes.

#### **Anatomy**

It is important to recognize the parts of the eye before learning about floaters and flashes. This section reviews the anatomy of the eye.



Light hits the cornea of the eye first. The cornea is the transparent covering on the front of the eye.

Next, light travels to the back part of the eye through the pupil. The pupil is the opening in the center of the iris, the colored part of the eye.

The iris controls the amount of light that enters the eye by changing the size of the pupil.

As light passes through the pupil, it enters a clear lens that focuses the light onto the back of the eye. The lens acts like the lens of a camera.

After passing through the lens, focused light continues through a clear gel called "vitreous". The light moves towards the back of the eye where the retina is located.

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The retina changes light into electric signals. The signals are sent through the optic nerve to the brain. The brain translates the signals into the images we see.

The middle part of the retina is called the "macula". The macula makes it possible for us to see things in front of us clearly.

The rest of the retina is called the periphery. It allows us to see things on either side of us. This type of vision is called peripheral vision or side vision.

Like other parts of the body, the retina needs blood to function well. Blood flows to the retina through small blood vessels.

### Symptoms

People who have floaters see shapes moving in their field of vision.

Floaters may appear as dots, circles, lines, clouds, cobwebs, or other shapes. They usually look gray or white and are somewhat see-through. They may move or remain in one place.

About 70% of people have floaters. It is easiest to see floaters when looking at a plain background, like a blank wall or blue sky. Close one of your eyes and look at the white space on the back of this page with the other eye. Do you see a dot or a shape moving? This is a floater!

Floaters are usually small and move fast out of the field of vision. Therefore, they are of little medical importance unless they are big and make it difficult to see clearly.

More importantly, floaters can be a sign of serious eye problems such as retinal detachment. Retinal detachment sometimes leads to severe loss of vision and blindness.

If a floater appears all of a sudden or if there is a rapid increase in the number of floaters, you should see an eye doctor immediately. You may have a serious eye problem.

Flashes of light, called flashes, sometimes appear with floaters. Flashes look like flashing lights or lightning streaks, even though no light is actually flashing. Flashes are similar to the sensation of "seeing stars" when a person is hit on the head. Flashes are usually noticed at night or in a dark room.



Some people experience flashes as jagged lines or "heat waves" in both eyes. Flashes often last 10-20 minutes. These types of flashes are usually caused by a spasm of blood vessels in the brain, called migraine. Some migraines are followed by a headache.

### Causes

The vitreous gel that fills the eye is mostly water but also contains proteins and other molecules. Focused light travels through the vitreous gel to reach the retina.

If an object is between the light and the retina, the object's shadow reflects on the retina. Therefore, floaters are shadows caused by structures suspended in the gel. When we see floaters we are actually seeing the shadows they cast on the retina.

Where do these structures or objects suspended in the vitreous gel come from?

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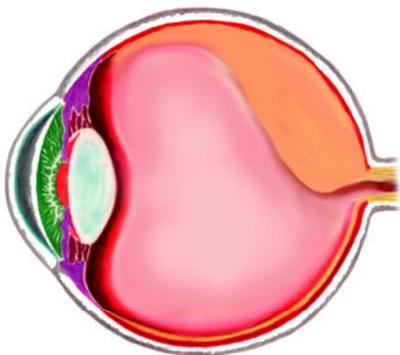
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Floaters either come from the vitreous gel or from cells of tissue around the vitreous.

Protein fibers of vitreous gel can clump together. The clumps can block light and casts a shadow on the retina. These types of floaters are usually small and may look like cobwebs, transparent circles, or tadpoles and are not accompanied by flashes. They remain in the vitreous gel permanently and we learn to ignore them.

Blood vessels in the retina can sometimes bleed if the vitreous gel pulls on them causing a small hemorrhage. Red blood cells generally appear as tiny black dots and may look like a swarm of gnats or like smoke. Floaters due to red blood cells typically go away as the blood absorbs but it may take months for them to go away completely.

When we age, the vitreous gel thickens and starts to shrink. This causes it to pull away from the retina. The detachment is called posterior vitreous detachment or PVD. Debris from the detachment site drifts into the vitreous and becomes floaters.



When PVD happens, a larger sized floater usually develops. This type of floater can look like a cobweb or a veil that blocks part of the vision field. PVD causes the vitreous gel to pull on the retina, producing flashes. When a person is seeing several floaters and flashing lights, it is often a sign of PVD.

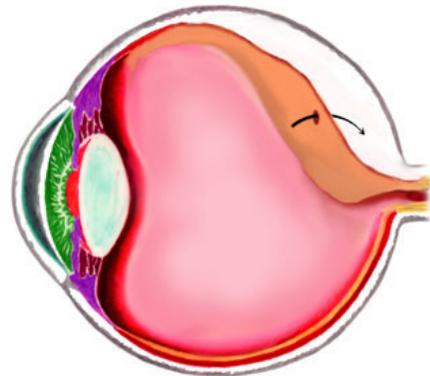
PVD is more likely to occur if a person has had cataract surgery, trauma to the eye or inflammation inside the eye. PVD also occurs more frequently in near-sighted people than in people with normal vision.

In most cases the vitreous will separate cleanly from the retina and will not cause any further problems. The flashes gradually fade away, and then disappear altogether. Floaters caused by PVD may continue, but become less noticeable within two to three months.

For some people, the detachment of the vitreous from the retina can cause a tear in the retina. This tear can cause the retina to detach from the back of the eyeball, a serious condition that can cause loss of vision and blindness. The next section explains these retinal complications.

### Retinal Complications

If the vitreous is strongly attached to the retina or if the retina is weak in a certain area, a retinal tear can occur as the vitreous separates from it.



Once a retinal tear develops, there is a large chance that the vitreous will go through the tear, causing the retina to detach. This is known as retinal detachment. If the retina detaches from the back of the eye, partial or total loss of vision may occur.

The symptoms of retinal detachment include:

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- Sudden increase of floaters
- Flashes of light
- Reduction of vision
- A shadow or curtain in the peripheral vision. Typically the shadow will move toward the center of vision over hours, days or weeks.

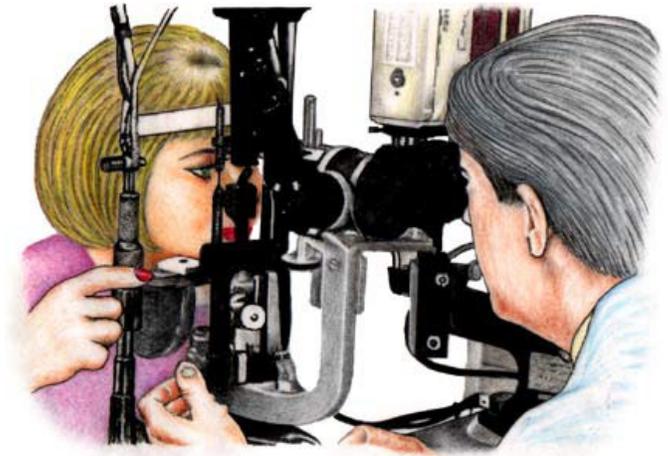
When the retina detaches, it becomes separated from the underlying tissue it needs for nourishment and support. The retinal cells begin to degenerate when they do not have the proper nourishment and support. If the retinal detachment progresses into the center area of vision (the macula), vision begins to decrease.

The longer the center of vision has been detached, the worse the cell degeneration and vision become. Therefore, it is best if a retinal detachment can be diagnosed and repaired before the center area of vision becomes detached.

Even if the macula has detached it is usually still important to repair the detachment to prevent total blindness and restore some lost vision. Therefore, in order to give yourself the best chance of diagnosis and treatment of a retinal detachment before it affects the macula you should get your eyes checked by an ophthalmologist RIGHT AWAY.

### Diagnosis

An ophthalmologist examines your eyes to determine if your floaters and flashes are due to a tear in the retina or other eye problems. An ophthalmologist is a medical doctor who specializes in diseases and surgery of the eyes.



The doctor will ask you to describe any floaters and flashes you may be having.

The doctor will then examine your eyes to check for retina damage. The doctor will not be able to see your floaters unless they are very large.

Through your pupil, the doctor can see a small portion of your retina. After dilating or widening your pupil with eye drops, the doctor will be able to see all of your retina with an ophthalmoscope

Dilation is a very safe procedure. Most people only experience blurry vision and a sensitivity to light for a few hours after the exam. You may not be able to do any close work that requires eye coordination, such as reading or sewing, for a few hours after the exam.

As the doctor examines each of your eyes, he or she will ask you to look in different directions. Follow the instructions so your doctor may perform a thorough examination of your eyes.

The doctor will push gently on your eye with a cotton-tipped applicator or a special blunt metal instrument called a scleral depressor. Pushing on the eye, called scleral depression, allows the doctor to see areas of the retina that he or she cannot see in any other way and is

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necessary for a thorough retinal examination. Scleral depression may be mildly uncomfortable and anesthetic eye drops may make the experience more comfortable.

The doctor will use a very bright light to examine your retina. You will notice that everything looks dark purple for a minute or so after your eyes are examined. The dark purple will gradually fade to pink. The light is not harmful. Things should appear normal again in about 10 minutes or less. If the sensation lasts longer, discuss this with your ophthalmologist.

Your doctor may do additional eye tests, such as vision test, eye pressure test, eye ultrasound and others to help diagnose the cause of your symptoms

### **Treatment**

There are no medications or eye drops to make floaters disappear.

Flashes caused by the vitreous separating from the retina are a normal part of aging and should subside within a few weeks or months.

Over time, you won't notice floaters as much because your brain will learn to ignore the retinal images. Therefore, while some floaters may remain in your vision, many of them will fade away and become less bothersome.

If a floater appears directly in the line of vision, moving the eye around will often help. Looking up and down or back and forth causes the vitreous fluid to swirl around and usually makes the floater move out of the way.

If floaters significantly reduce vision and do not fade away with time, your doctor may recommend surgery to remove the vitreous gel and replace it with saline solution. This surgery is called vitrectomy.



Vitrectomy is very successful in treating floaters because it removes the majority of the vitreous gel. However, it is rarely needed because floaters usually become less bothersome with time. In addition, vitrectomy is a major eye surgery with risks that are usually not worth taking for floaters alone.

Vitrectomy requires an injection to anesthetize the eye and can take anywhere from 20 to 60 minutes. If any unforeseen problems are found at the time of surgery, vitrectomy may take longer. Risks of vitrectomy include retinal detachment, infection, bleeding, cataracts and blindness.

In cases where floaters do indicate a more serious condition, several treatment options are available to prevent vision loss as the retina detaches. Such treatment includes laser treatment for retinal tear and surgical treatment for retinal detachment.

### **Prevention**

You cannot prevent floaters and flashes, but you can prevent vision loss by recognizing the symptoms of retinal tear and retinal detachment.

Periodically check the vision in each of your eyes to make sure there are not any new floaters or flashes. Cover one eye and pick a point straight ahead to look at. Count the number of floaters and pay attention to how long and how intense the flashes are.

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You should see your ophthalmologist if:

- You have never seen floaters and flashes before and all of a sudden you start seeing a lot of them.
- You had floaters and flashes before, but you notice a sudden increase in how many there are.
- A veil or a gray area appears in your peripheral vision or side vision.
- You have had floaters and flashes for a long time, but they now look different than they used to.
- Your floaters interfere with critical tasks such as reading and driving.

You had floaters in one eye years months or years ago and now have them in the other eye.

### Summary

Floaters and flashes are very common. Most people experience them at one time or another.

Floaters and flashes become more frequent as we age. They may appear when the vitreous gel separates from the retina, a normal sign of aging. However, they may also be the sign of a retinal tear or retinal detachment. Retinal detachment causes partial or total loss of vision.



It is important to get regular eye exams and to inform your doctor if you experience floaters or flashes. If your eye doctor finds any serious problem, he or she may be able to fix it before it causes loss of vision.

Fortunately, most floaters fade over time and become less bothersome. If floaters interfere with tasks such as reading or driving, surgery to remove the vitreous is available as a treatment. However, it is rarely needed.

Thanks to advances in medicine, several surgical options are available to treat retinal tear and retinal detachment, if any are found during your eye examination.

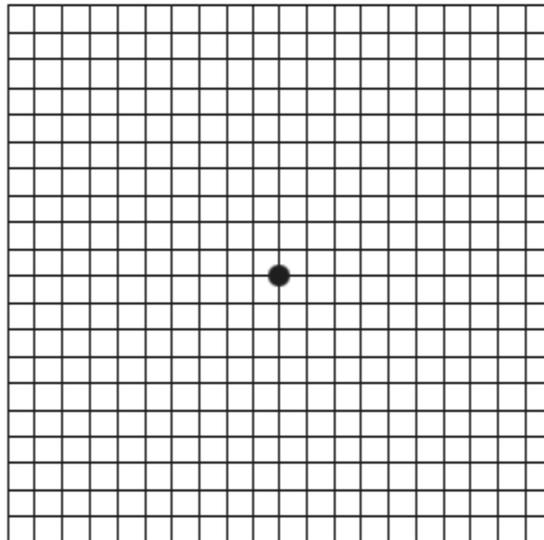
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## Grids To Test Your Vision

This is the Amsler grid. It is useful for monitoring your vision, particularly your sharp central vision. Follow these directions.

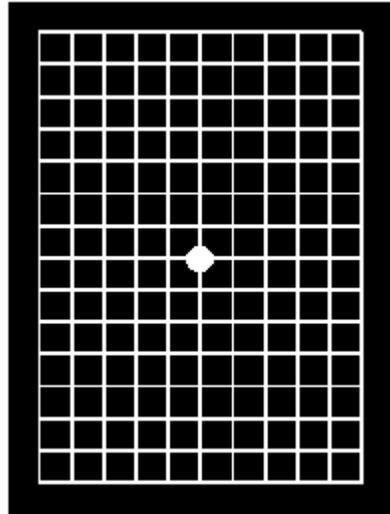
1. If you have reading glasses wear them. Do the test in a well lit room.
2. Hold the grid at reading distance.
3. Cover one eye at a time with the palm of your hand.
4. Stare at the center dot of the grid at all times. Do not move your eye.
5. Notice any abnormality in the grid such as:
  - Are the lines bent, wavy, blurry, missing, crooked, or discolored?
  - Are any of the boxes different in size or shape from others?
  - Do you see new floaters?
6. If you find new signs or symptoms, contact your eye doctor immediately for an examination.



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This is the Yannuzzi card; it is a variant on the Amsler grid. It is small enough to fit in your wallet and may therefore be more accessible on a daily basis. You use it as you would use the Amsler grid except that you should check your vision with it holding it vertically then horizontally.



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